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ABSTRACT

The research on workplace literacy programs during the past two decades has revealed a great deal about the requisites for successful workplace literacy programs. The following have been identified as characteristics of effective workplace literacy programs: active involvement by all project partners; employee involvement in the early stages of planning; systematic analysis of jobs and related literacy skills; linkage of instructional exercises and day-today work activities, provision of adequate practice time; and ongoing staff development. Including a mix of learner-centered and workplace-centered goals and providing adequate monetary, job-related, and learner support incentives have been demonstrated to be critical to ensuring employer and employee support of workplace literacy programs. A trend toward programs with less emphasis on improving the productivity of a particular workplace and more emphasis on providing general work force education has been established, and the importance of formulating reasonable program and learner goals and matching assessment to instruction has been documented. Studies have also confirmed that the most successful workplace literacy programs are fully integrated programs that use multiple strands to address learner and workplace needs, provide continuing educational experiences, and make extensive use of custom-designed instruction based on analysis of critical job tasks. (Contains 58 references.) (MN)

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Key Issues for

Workplace Literacy Educators

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Abstract

In the last two decades, much has been learned about the characteristics of effective workplace literacy programs. For example, businesses face several different literacy issues which require quite different solutions. In addition, improvement in literacy ability requires significant practice time, there is only minimal transfer from one type of learning situation to other applications, and skills must be practiced to be maintained. Effective programs have solved these problems by gradually developing multiple strands of instruction, by involving all project partners (including employees) in the early stages of program planning, and by analyzing literacy-related job tasks to create a link between instructional exercises and day-to-day work activities. Multi-strand programs can address employers' concerns with improving productivity and can also help workers with their personal development through strands such as GED preparation and family literacy, or other concerns that workers may have. Also, instruction that is based on systematic analysis of job tasks can create a direct link between instruction and work activities, thus increasing learner practice time as learners practice on the job. In order to plan and implement such programs, many educators new to workplace literacy will need training in negotiation, task analysis and the design of customized curriculum.

To be successful, workplace literacy program providers often have to perform difficult balancing acts. They must provide brief, focused, short-term instruction that succeeds—or they will not be invited back. At the same time, they need to lay the groundwork for long-term goals and multi-strand programs—or they will not be able to develop a truly competent, flexible workforce. Similarly, providers must address a mix of both employer and worker needs, if they hope to achieve active involvement and program success. The pattern for success is to start small, but have a vision of eventually developing a fully integrated, multi-strand program, to deliver on promises, and to be flexible.

Introduction

This report addresses several key issues that workplace and workforce literacy providers face as they plan and fund programs to address the needs of businesses and workforce populations. As the economy becomes increasingly global, businesses must look continually for ways to enhance their productivity and maintain quality to remain competitive in a world market. Workers must also enhance their skills to remain employed in a fluctuating job market.

Unfortunately, employers may recognize that they have literacy needs, but many tend to view literacy instruction as a short-term, one-time class that will provide a quick-fix solution for a particular problem. However, one instructional strand cannot address the multiple learner issues in any workplace. If employers expect to compete successfully in a world economy, they should provide workplace skills instruction that is multi-stranded and long-term, dealing with learners' concerns as well as productivity issues.

In today's job market, skill demands are increasing and workers are likely to change jobs several times during their careers. Therefore, in addition to literacy programs based at particular workplaces, there is a need for workforce literacy programs that can increase workers' chances of remaining employed in jobs that pay competitive wages. The providers of these workforce programs are likely to be state offices of workforce development, adult education agencies, unions and other non-employer groups.

This report discusses the nature of workplace and workforce programs, as well as considering the characteristics of effective programs, the need for staff development, and incentives for both employers and employees. The report also compares workplace-centered and learner-centered goals, and discusses more generally the setting of reasonable goals for a program, together with methods for evaluating the achievement of those goals.

In a final section, the report summarizes the various factors just mentioned by describing three types of program provision: single service beginning programs, mid-level programs, and fully-integrated programs. The last of these types incorporates all of the desirable characteristics of effective programs, but naturally few programs, if any, can start in this form. However, if program planners keep such an ideal in mind, they may find it easier to progress from a single service beginning, through a mid-level program to such a fully-integrated program.

What Elements Characterize Effective Programs?

Over the last two decades, much has been learned about the characteristics of effective workplace literacy programs. For example, we have learned that:

- there are several different workplace literacy issues which call for quite different sorts of solutions;
- literacy improvement takes a significant amount of learner practice time;
- transfer of learning to new applications is severely limited;
- significant learning loss occurs within a few weeks if skills are not practiced.

We have also learned that effective programs are characterized by active involvement of project partners (including employees) in systematically determining local literacy needs and developing programs to address those needs.

Multiple Strands for Multiple Issues

Because adult literacy levels vary so much and because there are so many different types of literacy demands, we face multiple literacy issues in the workplace and not just one. The person who reads at a very low level requires a different sort of educational support than does the high school graduate who cannot meet increasing job demands. English as a Second Language learners may need several different types of support. Program planners need to recognize that these issues cannot be addressed adequately by the same sort of instruction for all learners.

Increasingly, workplace literacy programs are becoming multi-strand. In these programs, one instructional strand might be available to learners who read at a very low level, while another strand might address high school graduates who are preparing for technical training, while still another might help those wishing to obtain GED certificates. For example, low-level literates might require practice in basic comprehension and job-related vocabulary, while high school graduates might need specific skills to support further technical training (e.g., job-related mathematics to support training in Statistical Process Control). GED preparation might involve taking a course at a community-sponsored program off-site, or perhaps working through practice exercises in classes at the worksite. Bussert (1991) surveyed 107 workplace literacy programs described in the research literature. Of those who provided sufficiently detailed program descriptions to make a judgment, 74% offered multiple strands of instruction—i.e., more than one type of curriculum to address various learner issues. In a later analysis of programs in the mid-1990s, multi-strand programs had climbed to 93% (Mikulecky, Lloyd, Horwitz, Masker & Siemantel, 1995).

Improvement Takes Significant Learner Practice Time

Training material and technical reading material in the workplace tends to range in difficulty from upper high school to beginning college difficulty levels (Sticht, 1975; Mikulecky, 1982; Rush, Moe & Storlie, 1986). To improve one grade level in general literacy ability, adults take an average of 100-120 hours of instruction. Even the most effective programs still require 50-60 hours of instruction for average learners to improve one grade level (Mikulecky, 1989). In many industries the standard class is less than 30 hours. While 30 hours of instruction can help learners improve a little, it is not reasonable to expect an adult who reads at a low level (i.e., has difficulty with short sentences) to jump several grade levels to high school difficulty material (i.e., a newspaper). After all, 30 hours is the equivalent of only four full days spent by an adolescent in school.

Since significant literacy gains usually take more time than is typically allocated in workplace education classes, more practice time must be found. Effective programs have developed at least three methods for increasing practice time. Some programs use workplace materials as part of instruction, thus increasing practice time as learners read these same materials on the job. Others provide sequences of instruction allowing learners to move from one strand to another, taking several courses, and eventually moving to courses at a technical school or community college. And, although this approach is much more rare, some programs immerse employees in an integrated technical/basic skills course full-time for several weeks. Temporary shutdowns such as retooling times or temporary layoffs can be ideal for such immersion courses.

Transfer to New Applications is Severely Limited

Many people mistakenly think that short-term general literacy instruction will translate to improved learner skills on the job. College-educated adults often make this mistake because they are able to apply their own high literacy skills to learning and meeting the demands of new jobs. They can do this because the literally thousands of hours they have invested in literacy use have provided them with a high level of skills and greater than

average general literacy capacity. When they encounter new types of literacy, they have excess capacity which allows them to learn and plan while attempting to understand new challenges in print material.

The same situation is not true of low- and middle-level literates, however. They have practiced little and have no expanded literacy capacity. In fact, for a person who has not read much and struggles with a newspaper, new workplace literacy demands may be more difficult than anything ever read before. There is no excess of general literacy capacity to support learning new technical vocabulary and strategies. A couple of months of general literacy instruction at four hours a week will provide only a slight improvement in general literacy skills, and usually no noticeable impact on the ability to apply general literacy to technical applications. Therefore, what we want people to be able to do, we need to teach them. Short-term instruction is most effective for short-term goals, such as reading a form, using a manual, or following a safety procedure.

The limitations of literacy transfer have serious implications for workplace literacy programs. This is especially true if programs attempt to use traditional, school-type materials. Sticht (1982, 1987) found that general literacy education did not transfer to job applications. He now recommends a "functional context" approach. This approach teaches literacy by using the materials with which learners are likely to function on a daily basis.

Significant Learning Loss Occurs Without Regular Practice

When a person cannot transfer learning to real-world situations, opportunities to practice new skills while performing everyday activities on the job are lost. Sticht (1982) reports that military enlisted men improve in general literacy abilities while they are in general literacy classes, but that within eight weeks, 80% of the gains are lost. However, when job-related materials are used to teach literacy abilities, most learning gains are retained. This is probably because learners could continue practicing on the job the abilities they had mastered when they learned with job materials.

Workplace literacy providers cannot expect significant improvements in literacy abilities if learners are taught in short-term classes, using only general materials that have no relationship to the materials they see daily. The timing of workplace literacy instruction is also important. Preparing learners for the skill demands of new jobs may be wasted if they must wait several months before they are able to apply and practice their new learning.

In summary, when designing a literacy program, it is necessary to consider four constraints that will affect the program's success in making a positive contribution to the productivity of the organization. Because workers' skills vary widely, providers should design a multi-strand program that can address a variety of learner needs. Workplace literacy education also requires a long-term commitment, since improvement requires a significant amount of practice time (i.e., 50-60 hours at a minimum for the equivalent of one grade level gain). There is no such thing as a quick-fix solution to literacy skill issues. To gain improvement in job performance, literacy skills should be taught using some job-related materials, rather than just general educational materials that do not provide a clear link to the job. Finally, instruction must provide opportunities for practice in a timely manner, or else newly-acquired skills will be lost before they can be used on the job.

Key Elements of Effective Programs

A recent study of 37 workplace literacy programs (Kutner, Sherman, Webb, & Fisher, 1991) identified four key elements of effective programs. Effective workplace literacy programs are characterized by:

- active involvement by project partners;

- active involvement by employees in determining literacy needs;
- systematic analysis of on-the-job literacy requirements;
- linking instructional tasks to job tasks identified during task analysis.

Bussert (1991) reported that of 107 programs described in the research literature, 92% involved two or more partners. Most of these partnerships involved employers working with others (88%), including unions, other businesses, schools (e.g., public schools, community colleges, or universities) or government agencies.

The programs were reported to be most effective when each partner played an active role during the early stages of planning and a continuing role in supporting program goals. Involvement went beyond leaders, however, to include learners themselves. Learners helped gather materials and made suggestions for expanding the collection of job-related materials. It was usually those closest to the job who knew what strategies would be most effective in gathering information and solving job problems. Often program materials addressed a mix of learners' work and home needs. Active participation of partners sometimes meant that supervisors and top job performers helped to analyze job tasks and suggested materials and approaches which they found effective in preparing new workers.

An example will serve to illustrate the elements of effective programs. Mikulecky and Strange (1986) reported on a program to teach word processor operators. The program involved extensive instructional time, during which workers were paid to attend 14-20 weeks of classes for 40 hours per week. The number of weeks was determined by how long it took learners to function at levels comparable to those of average word processor operators who were currently employed. Applicants were screened and none were accepted who read more than three grade levels below the difficulty level of the business materials used by existing word processor operators. These materials ranged from high school to college level in difficulty. Employers and top-performing workers helped to analyze job tasks and provide benchmarks for acceptable performance.

The average learner in the word processor training program reached job-level competence in 20 weeks. Some learners found work in as little as 14 weeks, but others required as long as 28 weeks. Despite a recession during which 1/3 of all the participating employers stopped hiring, 70% of the program participants found employment within two months of completing the course.

This program demonstrated several features which contributed to its success. All project partners including workers participated actively in planning the program and analyzing job tasks. This participation encouraged workers to buy into the program. It also made the program more effective, since program planners took advantage of workers' knowledge of the requirements of good job performance. In addition, learners were able to find work as word processors because the instruction used job-related tasks, enabling learners to link what they had learned to their new job responsibilities. Another factor that contributed to the program's success was careful screening of applicants. The program targeted learners whose abilities were not too far below the level of existing word processor operators. This screening demonstrates a realistic assessment of the program's ability to change learners' performance.

This example concentrates on a particular program strand, but it should not be seen as the only form of instruction in a workplace literacy program. A multi-strand program would also have basic literacy instruction to prepare low-level literates for participation in the more intensive technical strand. ESL learners might be in a different strand, integrating literacy and oral language use. The point to note here is that different learner needs are catered for in different ways by providing a range of program strands.

Staff Development

The elements of effective programs identified by Kutner, Sherman, Webb, and Fisher (1991) imply a fifth element—on-going staff development. Because workplace literacy is a growing area, many teachers and directors in workplace programs are recruited from adult basic education (ABE) or school settings. Many adult basic skills instructors are quite effective at working with low-literate learners in one-on-one situations or at preparing groups of learners to pass the GED test. They may not, however, have had any experience or training in what is required to operate an effective workplace literacy program. Staff development training may also be needed for program directors and curriculum developers new to the challenges of workplace literacy. Among potential areas for training are the following:

- negotiating projects with stakeholders,
- conducting job task analyses,
- custom-designing curriculum,
- recruiting learners for workplace courses,
- designing assessment measures,
- teaching job-related curriculum, and
- developing sensitivity to the workplace climate and culture.

One area in which workplace programs differ from adult basic education is the need to negotiate with several stakeholder groups when deciding what a program will teach. Many workplace classes last only 20 to 30 hours, so it is necessary to set up well-defined and limited goals from the beginning. Employees, administrators, representatives from unions or other partner organizations, departmental supervisors, and members of the company training department will all have their needs and priorities. Program directors and designers have the job of determining which educational needs will be addressed first with the time, money, and resources available. This involves negotiation, persuasion, and a good deal of explanation about realistic expectations.

In order to conduct such negotiations successfully, program personnel need to be familiar with the possibilities of multiple strands of instruction, job task analysis, and custom-designed curriculum. They also need to be aware of research findings concerning learning loss without continued practice, lack of transfer from one context to another, and improvement taking a significant amount of learner practice time. As well as acquiring appropriate knowledge, educators involved in workplace program planning also need to develop their negotiating skills. Although they may not previously have seen negotiating as part of their role as educators, they could well have applied similar skills to discussions of teaching arrangements in an ABE program or to family decision-making about a vacation. Training here is likely to involve a raising of awareness about other negotiating situations in which the educators have been successful, plus role play in scenarios of possible workplace negotiations. Only with such skills and a sound knowledge base can a program director work with a group of stakeholder representatives to produce a program that has the potential to succeed.

Two ideas just mentioned are at the core of much workplace literacy instruction: job task analysis and custom-designed curriculum. Program designers need to be able to conduct job task analyses—in cooperation with workers, supervisors and managers—to determine where performance problems are occurring in the workplace, and then to break these problem areas down into the literacy-related tasks that need to be taught. From such task analyses comes custom-designed curriculum. This is based on the materials and skills used by workers to perform their jobs, and requires the careful gathering of information and job-related materials. Again, training is needed before an educator used to teaching

from textbooks can confidently conduct a task analysis or design customized curriculum.

Recruitment of learners for a workplace program also needs a different set of skills from those required in adult basic education. ABE programs often have waiting lists, and ABE learners are volunteers who have perceived a need for more education. The personnel in a new workplace program will often need to sell their program and convince skeptical workers that it can be of benefit to them. This applies whether participation is voluntary or mandated. A volunteer program must recruit actively in the workplace with an instructional package which workers see as relevant to their needs. But, even if attendance is mandated for workers whose job skills require enhancement, program personnel will still need to convince those workers that the program is not just a management tool, but includes their educational interests as well. Otherwise worker resistance to the program's goals are likely to prevent anything useful being achieved. Active worker participation can be gained with a combination of incentives (e.g., provision of refreshments in class, payment for attending classes, attendance fulfills training requirements, course completion offers chances for promotion) and direct involvement in planning the program so that it meets their needs and interests. Negotiating the incentives package with managers and involving workers in designing the program both require program personnel to learn skills that they are unlikely to have needed in an ABE context.

Evaluation of workplace literacy programs is very different from evaluation in adult basic education. Improvement on a standardized test of general abilities or passing a GED test is not usually an appropriate measure of success for a brief workplace course. When customized job-related curriculum is being used, assessment measures need to be tied closely to instruction —that is, they also need custom-designing to match the job skills being taught. In addition, workplace program evaluation needs to look at the impact on job productivity. Therefore, it may be necessary to design such assessment instruments as job-related scenarios and employee job rating scales, and to investigate company records related to the skills being taught. Designing such assessment measures requires a set of skills that most adult educators without workplace experience will need to learn and practice.

The importance of evaluation is also stressed more in workplace programs. In many cases, continued funding depends on it. For instance, the literacy program may have to compete for funding with other departments of the company. Or, if it has external funding, a program may have to compete for continued government or foundation support. Consequently, program evaluation and the presentation of evaluation results form a significant part of workplace program management—and these are areas in which program personnel will probably need training.

Many of the activities described above may be carried out by program directors and managers, rather than classroom teachers. But, particularly in smaller programs, the same individuals may be involved in all aspects of development and instruction. In any case, program teachers are a crucial element of any workplace literacy program. Once instruction has started, they are the ones in day-to-day contact with the workers, and a program can succeed or fail depending on how well the teachers can interact with the learners in their classes.

Because many teachers in workplace programs are recruited from adult basic education or school settings, they may have no experience of how to teach job-related curriculum. They could be accustomed to being the subject matter expert in an academic classroom, and so have some difficulty coming to terms with the shared responsibility of many workplace classes, where the learners are content experts on their jobs and teachers need to learn as well as teach. Another aspect of teaching in a workplace is sensitivity to the workplace climate and culture. Here again, the teacher can learn much from the workers, by listening

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carefully and not making assumptions about them or their jobs. In this way, a relationship of confidence can be established, which will facilitate teaching and learning.

In order to teach in this way, new workplace instructors will need training in the nature of workplace education, where they have several different pressures not found in an ABE program. As well as learning from the workers about their jobs, workplace teachers will need to negotiate with supervisors when there are conflicts between class attendance and production schedules, and to create and maintain positive relationships with workers and company management. In fact, much of what a workplace instructor needs to know and do can be summed up in one word: flexibility. To achieve this necessary flexibility, a teacher's view of the workplace program needs to be almost as wide as that of a program director or developer. It must be remembered that, however well a program has assessed the needs of a workplace, and however good a curriculum has been developed to meet those needs, it is ultimately the instructor in the classroom who determines the success of the program. It is therefore vital that a program selects good teachers and prepares them well for their role in the workplace.

In summary, characteristics of effective programs include: active involvement by all project partners, involving employees in the early stages of planning, and analysis of jobs and related literacy skills. The vast majority of programs are jointly sponsored and managed, and these partnerships are most effective when all members are actively involved in planning from the outset. Effectiveness increases further when employees participate actively in planning, analyzing job tasks, and deciding on program goals. In addition, effective programs analyze job tasks and use this information as the basis for a custom-designed curriculum. In order to carry out such a plan, program planners and teachers need to be very familiar with the workplace environment. To achieve this, extensive staff development will be needed for those coming from other areas of education.

Learner-Centered and Workplace-Centered Programs

Much of the discussion of programs, thus far, has focused upon one of the elements of effective programs—linking instruction to workplace demands. This focus, however, can sometimes run counter to another element of effective programs—taking the needs of all stakeholders into account. Learners are key stakeholders in the process and sometimes they do not agree with the goals, materials, and emphasis of workplace-focused programs if those programs are thrust upon them.

Gowen (1992) describes a hospital literacy program designed to improve the job-related literacy skills of workers in low-level jobs. Task analysis was performed to develop job-related instructional material, but workers did not participate in the process and were not asked about their desires for instruction. Gowen reports that, when they entered classes, few were interested in working to improve performance on current jobs. Many wanted to improve literacy abilities to get new and better jobs or to improve literacy abilities for home use, church use, or personal use. In some cases, learners objected that workplace instructional materials designed by outsiders matched ideal situations, but not what really occurred at the hospital. In fact, following instructions in their job situations could be life-threatening. Hull (1993) reports a similar mismatch between workplace literacy instruction and actual demands in banking occupations. Again, workers themselves were not involved in collecting workplace information. Sarmiento, a spokesperson for the AFL-CIO, has made the point that long-term investment in workers rather than simple one-time job skill training is the most sensible path to take.

This raises an issue concerning program goals: to what extent should they be workplace-centered or learner-centered? Learner-centered goals take into account learners' personal needs such as raising their level of general literacy, obtaining a GED, or helping children with homework. When organizations state workplace-centered goals, the aim is to improve the overall productivity of a company. They do this by teaching skills using a functional context approach to literacy. Sticht (1987) defines functional context as a direct link from specific job tasks to instructional materials and activities.

Programs that use a predominantly workplace-centered approach first analyze job tasks to produce a collection of literacy skills and tasks tied to the context of the job, and then develop instruction that uses job-simulation exercises. The advantage of job-simulation exercises is that learners can make a direct link between what is being learned and its application to everyday job tasks. This functional context approach also increases practice time as skills are used on the job. The goal of workplace-centered programs is to help workers succeed on the job so that productivity will increase.

Programs that include some learner-centered approaches tend to state goals that focus on the individual needs and interests of workers. For example, goals may include offering GED instruction, Adult Basic Education, or English as a Second Language classes that are not tied to the context of the job, but are designed to assist employees in enhancing their skills more generally. Other learner-centered approaches to workplace literacy instruction might use task analysis as the basis for some parts of the curriculum, but employees are encouraged to participate, contributing to decisions as to what skills should be taught.

Some learner-centered goals also account for learners' interests and needs such as assisting children with homework, pursuing hobbies, dealing with fear of job loss, and other concerns. One advantage of addressing learners' concerns is that they are more likely to buy into the program. For example, even if attendance is compulsory, programs that do not take into account learners' goals and interests may only obtain passive compliance. Giving workers a say in planning their own program will encourage them to participate actively in the program and accomplish their goals.

In addition, as the market demands higher levels of skill to remain employed in high wage jobs, workers need to change their habits, attitudes and lifestyles to include lifelong learning. The Secretary's Commission on Achieving Necessary Skills (U.S. Department of Labor, 1991) outlines the skills necessary to remain employable in an increasingly competitive job market. Programs are beginning to recognize and address this need to continue to acquire higher-level skills, by combining general instruction with job-specific instruction. A typical example of a program that encourages workers to engage in lifelong learning is a program at A.C. Rochester (a division of General Motors and manufacturer of fuel injectors for cars). Twenty percent of employees at AC Rochester are enrolled in a state-funded program that offers workplace literacy classes, a GED preparation program, and tuition toward college courses after completion of the in-house program (National Center of Education and the Economy, 1990).

In fact, most workplace literacy programs incorporate some workplace-centered and some learner-centered goals. There are several advantages to having a mix of both types of goals. Including learner-centered goals in a program can reinforce job skills with everyday skills used outside the workplace. For example, a class that teaches filling in and checking the accuracy of numbers on a workplace chart could also use exercises based on performing these tasks with a checkbook register. Another advantage of including both types of goals in a program is extra practice of new skills, since learners will use their learning both at home and on the job. Including learner-centered goals also encourages learners to buy into the program because they recognize that they can obtain personal

benefits. The discussion below highlights how programs have incorporated both types of goals and provides examples to illustrate each type.

Program Examples

Mikulecky, Lloyd, Horwitz, Masker and Siemantel (1995) surveyed 121 workplace literacy program reports that were entered into the ERIC database between 1990 and 1993. An examination of the stated goals of these programs indicates the extent to which they are workplace-centered or learner-centered. The survey classified the programs into one of three types: those offering job-related skills instruction only, those offering general skills instruction only, and programs that offer both types. Workplace-centered literacy goals were identified when program descriptions included at least one of a number of features, such as: upgrading workplace skills, offering job-related instruction, providing a custom-designed program, or determining workplace literacy needs. General, more learner-centered skills were identified when program descriptions stated that basic literacy instruction was provided, or that basic math, reading, computer, communication or thinking skills were the focus of instruction.

Of the programs examined by Mikulecky et al, nearly half (45%, or 54 of 121 programs) provided both learner-centered (i.e., general skills) and workplace-centered (i.e., job-related) program strands. The following table illustrates the breakdown of programs in the survey:

job-related skills training only	52 programs (43%)
general skills training only	15 programs (12%)
both general & job-related	54 programs (45%)

An example of a job-related, workplace-centered program is the Kodak Skills Enhancement program. Designers determined the workplace literacy needs of Kodak's Colorado division and wrote a curriculum that used the functional context of jobs to teach literacy skills. Instruction consisted of a multi-strand approach to basic mathematics skills required to perform manufacturing and quality control tasks expected of the workers (Beaudin, 1993).

An example of a program that incorporated both workplace-centered and learner-centered instruction is the California Rural Workplace Literacy Project. This program provided literacy education to migrant and seasonal farm workers. Both reading and job skills were taught in multiple strands. Success was indicated by evidence of job retention, career advancement, increased earnings and continuing education (California Human Development Corporation, 1991).

The Mikulecky et al study (1995) summarized the stated goals of the 121 programs examined. A breakdown of goals by type follows. (Since nearly all programs stated multiple goals, the totals add up to more than 100%).

Job Enhancement and Productivity: Of the programs surveyed, 61 (50%) report the workplace-centered goal of connecting job literacy instruction to specific training to improve workers' job skills and work ethic. Eleven programs developed programs to meet "high-performance" workplace goals such as Total Quality Management, Quality Assurance, Statistical Process Control, Just-in-Time manufacturing, and High Technology and Industrial Process Management. In addition to these goals, 6 programs (4%) are designed to improve safety in the workplace.

Functional Context Literacy: 60 programs (49%) use a functional context approach which Sticht (1987) describes as a direct connection between instructional materials and

work tasks. Among these 60 programs, 38 specifically mention or describe creating custom-designed, job-related curricular materials.

Learner-Centered General Basic Skills: 69 programs (57%) state a variety of learner-centered goals including: life skills, time management or promoting lifelong learning. Nine programs have a GED component.

Instruction for Retention or Advancement: 36 programs (30%) report a goal of upgrading skills and encouraging employee retention, promoting job security, reducing turnover, or making lateral moves.

Morale: 26 programs (21%) report a goal of improving attitudes. This category included improving self-esteem, motivation, confidence, and reducing stress and absenteeism.

Many programs addressed multiple goals and provided multiple program strands, including learner-centered classes and job-centered classes. In such a multi-strand program, for example, workers may take a GED preparation course, and upon obtaining the GED, they may then enroll in a course that prepares them to pass a test required for advancement to higher-paying jobs. Multiple program strands allow workers to upgrade their general literacy skills, move into higher-level jobs, and perhaps continue their education at a technical school or community college. Thus, by engaging in lifelong learning, workers increase their chances of remaining employed throughout their careers, even in a changing job market.

Multi-strand programs also provide benefits to employers. By encouraging workers to participate in multiple strands, companies can retain and promote experienced employees who previously might have lacked the literacy skills required for higher-level jobs, but who demonstrate other desirable traits such as good attendance and a strong work ethic. Thus, by offering program strands that address workers' and managers' concerns, companies can reduce turnover and increase productivity.

Incentives for Businesses and Employees

Many incentives exist for employers and learners to participate in workplace literacy programs. These incentives can be grouped into three categories: monetary incentives, job-related incentives and learner support incentives. Monetary incentives include government funding for employers to start programs, tuition and course support for employees and financial gains for employees (e.g., savings bonds, cash awards, pay for knowledge). Job-related incentives can include enhanced productivity and quality and increased opportunities for promotion and retention. Improved safety and employee relations (e.g., loyalty, morale) also contribute to an improved work atmosphere for all concerned. Learner support incentives include program flexibility, providing related support services, and creating opportunities for continued educational advancement and lifelong personal learning. In addition to these three categories of monetary, job-related and learner support incentives, less tangible benefits such as recognition from supervisors and increased self-esteem are also reported as positive incentives of workplace literacy programs.

Programs can also suffer from disincentives such as barriers to enrollment like changing work schedules and learners' previous negative experiences with the educational system. These can interfere with workers' ability and desire to participate in programs. Each of these points is elaborated upon below. (See also Hirsch and Wagner, 1995.)

Monetary incentives

Monetary incentives: government funding. One of the most common incentives for employers to establish workplace basic skills programs is government funding. For example, over 95% of Canadian programs receive full or partial government support (Johnston, 1991). In the United States, no thorough study has been done of the extent or sources of government support for educational programs. However, a review by Bussert (1991) of 107 programs reported in the literature indicates that of 33 who described their funding sources, nearly three-fourths received at least partial support from federal, state or local governments. In 1991, the Department of Education awarded $19.5 million in National Workplace Literacy grants (Adult Literacy and Learning Bulletin, August, 1991). That year, a total of $242 million was allocated, mainly for basic skills education through the U.S. Adult Education Act, and that amount was expected to increase to $260 million in 1992 (Education Daily, August 14, 1991). Although there is no thorough computation of the total amount of federal money spent on workplace literacy, the combination of targeted funds and general ABE funds used in the workplace probably exceeds $50 million each year in the U.S.

At the same time that federal funding was increasing, state and local funds were also expanding. Askov, Aderman, & Hemmelstein (1989) reports that West Virginia, South Carolina and North Carolina provide 100% matching funds for workplace literacy projects, and Massachusetts also has matching funds (Stein, 1989). Since 1989 the states of Florida, Idaho, Michigan, Missouri, Tennessee, Utah, and Virginia have become more heavily involved in funding and organizing workplace literacy initiatives (Chynoweth, 1989).

More importantly, the proportion of state versus federal funding has shifted since the late 1980s. While the total of federal funding for the National Workplace Literacy Program has remained slightly below $20 million per year since the late 1980s, less is known about the total spent by states, but state funding has almost certainly exceeded this level. The Bussert survey (1991) indicates that the majority of the 33 programs examined had multiple sources of funding. Support came in part from federal sources (27% of programs), state/local government sources (48% of programs), businesses (67% of programs), union funding (9% of programs), and other groups such as area literacy councils and libraries (12% of programs). Since the late 1980s, the ratio of state versus federal funding has changed. In Virginia, for example, it has moved from 0% state/100% federal to 51% state/49% federal. State literacy funding may become the driving force in the implementation of future literacy projects (Chynoweth, 1989).

Even though the level of state and federal funding has increased, the amount spent by businesses on workplace education still far exceeds government contributions. According to a survey of 20,000 U.S. employers with more than 100 employees conducted by the American Society of Training and Development, businesses spent more than $44.4 billion on training in 1989. Determining what fraction of this $44.4 billion went to workplace basic skills instruction is no easy task. About $4 billion (or less than 10%) went to programs labeled remedial. Not all workplace literacy programs are considered remedial, however. Many workplace basic skills programs have tended to avoid terms such as "literacy training" in favor of courses labeled communication skills, technical preparation, team building, clerical skills, problem solving, and other similar categories. In any case, a conservative estimate is $4 to $5 billion spent on workplace basic skills instruction by businesses. In contrast to these billions spent by businesses is the estimate mentioned above that only $50 million in U.S. federal funds was spent on workplace literacy instruction in 1990. Thus, most businesses rely on federal funds only for seed money to begin a literacy program.

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Monetary incentives: tuition and course support for employees. The most common incentive for employee participation in workplace literacy programs is fully paid tuition, books and materials costs. Employees are almost never expected to pay their own expenses for tuition and other associated costs of attending classes. The funds to cover these costs come from governments, employers and unions.

In all developed countries, there is some government support for employees to attend programs. For example, the Australian Department of Labour pays for employees to attend classes but does not reimburse employers for the time the workers are absent from the job (Newcombe, 1989). In Italy, workers can take time off to attend classes, especially remedial education, with full payment of their wages by a combination of employer and government funds (Luttringer and Pasquier, 1980). Except for the Bussert review of 107 programs (see previous page), the extent of U.S. government funding for employee participation in workplace literacy programs is unclear.

Support for some workplace literacy programs comes from employers. This includes monetary support measures such as payment of tuition and release time to attend Adult Basic Education (ABE), English as a Second Language (ESL) and General Equivalency Diploma (GED) classes as well as workplace literacy education. The Bussert survey indicates that 67% of programs in the U.S. receive some economic support from employers, but the number of programs supported solely by employers is not known. In Canada, only 4% of employers provide financial support for workplace literacy education (Johnston, 1991). Employers in Australia and Europe are taxed to pay for these programs, so they have an incentive to retrieve these funds by taking advantage of government-sponsored programs.

Besides government and employer financial support for employees to enroll in programs, unions such as the United Auto Workers and member unions of the AFL-CIO support workplace literacy education financially. This is usually done by setting aside a small portion (5-20 cents per employee per hour) of employees' hourly wages to finance technical training and workplace literacy programs. In Europe, unions run these programs, but the source of funds is unclear. Canadian unions operate workplace literacy programs using government funds.

Monetary incentives: financial gain for employees. Some employees receive monetary awards in the form of cash, savings bonds or gift certificates as incentives for completing programs. Programs have also offered cash or savings bonds for improving skills by one or more set levels. For example, Howden (1990) describes an incentive plan at the West Palm Beach Post newspaper in Florida. Employees received $100 bonuses for advancing four grade levels in an ESL program, and those who advanced from ESL to ABE or GED programs also received $100. Such monetary incentives are most successful when they pay for achievement of a clearly-defined goal, such as completion of the GED, advancing a certain number of grade levels, or improving test scores by a specific amount.

In addition to cash awards and bonds, a newer type of monetary incentive is pay for knowledge. Hart-Landsberg and Reder (1993) have spent several years studying a business which they gave the pseudonym of "Hardy Industries." In order to remain competitive in its market, Hardy Industries has completely changed its pay structure. The company has linked pay directly to demonstrated skills and knowledge rather than to seniority, job title, or current job performance. Skills and knowledge lists which range from operating a piece of equipment to performing Statistical Process Control procedures have been set up by teams of managers and employees.

The level of employee pay is determined by a low base pay rate plus additional pay for

each person's demonstrated skills. Pay raises are only given for demonstrating increased skills, not for cost of living increases. Skills are demonstrated by performing a task or taking a test. Volunteer instruction was available to prepare workers for the demonstrations and tests. Hart-Landsberg and Reder's research (1993) indicates that skill levels and salaries have improved significantly, and though the pay system has been difficult for lower-skilled workers, Hardy Industries is currently thriving.

Job-related incentives

Job-related incentives for developing programs: increased productivity and quality. Since the late 1980s, corporations have begun to invest significant amounts in workplace literacy instruction as a means to improve product quality, productivity and customer service. For example, the American Bankers Association reports that, in 1988, U.S. banks spent $32 million on basic skills education, an increase of 50% since 1985 (Mikulecky, 1989). Besides this example from the banking industry, there is some anecdotal evidence in the form of supervisor ratings and interviews to suggest that other job-related behaviors have also improved as a result of workplace literacy instruction. These include behaviors such as participants' productivity, quality, enthusiasm, alertness, attendance, and ability to follow instructions (Coffey, Eoff, Mayo and McDaniel, 1990; Hawaii University, 1990; Los Angeles Unified School District, 1990; Philippi, 1989).

Job-related incentives for attending programs: job promotion. Basic skill levels are becoming an issue in job promotion. Henry and Raymond (1982) report that over 65% of U.S. businesses surveyed about basic skills deficiencies indicated that such deficiencies limit the job advancement of their employees who are high school graduates. In addition, 73% reported that deficiencies limit the promotability of non-high school graduates. Increasingly, obtaining degrees or other certification credentials is a stated requirement for promotion in employer policies. Mikulecky (1995) cites several examples of employers in industries such as defense, hotels and electronics, who have established these types of requirements.

Job-related incentives for developing and attending programs: retention of employees. Job stability is a concern for both employees and employers. In developed countries stability is not guaranteed for low-skilled jobs because of technological advances and the loss of these jobs to third-world competitors. Fear of losing a job can be an incentive to some employees, providing they are able to recognize that their skills have not kept pace with new demands. Although there is little evidence to support the effectiveness of workplace literacy programs in improving job retention, employers have a vested interest in reducing turnover. Costs associated with hiring and training new workers as well as unemployment insurance payments are increasing. Investing in an existing workforce is more cost-effective than screening, hiring, and training new employees.

Additional job-related incentives: safety and improved employee relations. Safety is an important literacy issue, since the costs to employers and employees in terms of life and limb, liability suits, lost profits, and lost reputation can be quite high. When safety is included in workplace literacy programs, costs due to accidents and mistakes can be reduced (see for example, Norris and Breen, 1990; Hawaii University, 1990; Stein, 1989; Bethlehem Area Chamber of Commerce, 1990; and Cooper, Van Dexter, & Williams, 1988). In addition, employers can obtain the benefit of improved employee relations such as stronger employee loyalty and improved relations with co-workers (Hawaii University, 1990; Cooper, Van Dexter, & Williams, 1988).

Learner support incentives

Learner support incentives: program flexibility. Flexibility of schedules, locations and curricula can provide incentives to employees. Employees have cited scheduling problems

as a reason for not enrolling in programs (Mikulecky, 1995). Learning centers that use a tutoring format and offer extended hours and Saturday classes can more easily accommodate employees' varied and changing schedules. In addition, computer tutorials and correspondence courses can increase enrollment by providing privacy to learners who might be embarrassed if coworkers knew they were enrolled in basic skills classes (Bluff, 1989; Cooper, Van Dexter, & Williams, 1988; Holmes, 1989; Gross, Lee, & Zuss, 1988).

Learner support incentives: related support services. Two related support services, transportation and child care, are not often mentioned in workplace literacy program descriptions (Mikulecky, 1995). Child care on site or child care referrals, and transportation to the program site seem likely to provide additional incentives for those employees who need help with these concerns.

A third support service, counseling, is much more commonly provided. Counseling, if well-planned, can help to overcome learners' previous negative experiences with education, can improve low self-esteem, and can help learners to remain focused on their goals. Some program evaluations noted that high attrition rates were attributed to a lack of counseling, since learners can lose sight of their long-term progress and give up without reaching their goals (Hawaii University, 1990).

Problems with the counseling component of some programs have been reported. These include the unavailability of counseling on site and scheduling difficulties that make it impossible for employees to take advantage of counseling (Bricklayers and Allied Craftsmen, 1990; Arlington County Public Schools, 1990). Effective programs have a counseling component that is easily accessible, uses a clearly developed Individual Education Plan, and monitors progress toward established goals.

Learner support incentives: continued educational advancement. An incentive for employees is employer-sponsored programs that begin with basic skills education and continue through college courses (Cooper, Van Dexter, & Williams, 1988). Employees who recognize the need for further education view it as a means to an improved personal future through further educational attainment and lifelong learning. For example, at General Dynamics Electric Boat Division, nearly 40% of employees start with basic skills classes before pursuing an associate's degree and journeyman's certificate at a local community college (Liston, 1986). The opportunity for further educational advancement should be considered as an incentive in its own right.

Less tangible benefits. Many programs report less tangible benefits including increased self-esteem, recognition from supervisors and peers, and improved family relations. Increased self-esteem is reported in anecdotes from supervisors, co-workers, and sometimes learners. In addition, recognition in the form of awards or certificates can provide an incentive for employees. Improved family relations, especially an increased ability to help children with homework is a reason that some learners enroll in a program.

Barriers to enrollment. In addition to providing positive incentives, workplace literacy programs must deal with several disincentives to employee participation. One of the most common is changing work schedules (Grimes and Renner, 1988). For example, learners may change shifts in the middle of a literacy class, making it impossible for them to complete the program. Work schedule conflicts can be decreased by holding classes on-site or at a local union hall, or by scheduling instruction during Saturdays.

Another common problem is strong negative feelings due to previous experience with the educational system. This was the second most common reason given by students for dropping out of both ABE and workplace literacy programs (Bean, Partanen, Wright, &

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Aaronson, 1989). Another problem reported in a study by Grimes and Renner (1988) is fear of supervisor reprisals if employees enroll in classes. This fear was greatest among those with the lowest skills, because they were fearful of losing their jobs. The authors suggest that off-site classes be made available, perhaps at a union hall or other location. Union or employee representatives can also help to dispel fears of dismissal for admitting reading problems.

In summary, both employers and employees have incentives to participate in workplace literacy programs, and employers are motivated to support these programs financially. In effectively managed programs, employees can benefit from:

- instruction that is provided free of cost,
- opportunities for continued educational advancement,
- better job retention,
- possibilities for promotion, and
- improved relations with employers, co-workers and family members.

Employers can gain a more productive, loyal workforce, cost savings due to decreased turnover, and improved quality of products and services. Increasingly, funding of workplace literacy programs will be provided by state and local governments in cooperation with employers, as they recognize the need to invest in their employees as a means for improving the quality of life for all concerned.

Workplace and Workforce Programs

In the past, most programs, including many of those funded by the National Workplace Literacy Program, have tended to focus on improving the productivity of particular workplaces. Mikulecky et al (1995) surveyed 121 programs reported in the ERIC database between 1990 and 1993. Of these programs, more than three-fourths (92 programs or 76%) serve learners who work for clearly-specified employers. For example, a partnership of community associations in Orange County, Florida reached employees at 21 businesses with a heavy emphasis on hotels and restaurants, including the EPCOT Center (Casasnovas-Bauer & Thibodeau, 1990). Increasingly however, literacy programs are being developed that are not tied to specific employers or industries but are targeted to more general workforce populations. These include any workers who need assistance with workforce readiness such as interview skills, completing applications, job search strategies, and general work skills. An example of such a program is the New York City Education Program of the Central Labor Council for Workplace Education, which conducted classes in English as a Second Language, basic education, and union skills (Gross & Feldman, 1990).

Workplace Education Programs

Workplace education programs seek to improve the productivity of a particular business or industry by targeting instruction to specific jobs. Many of the programs funded by the National Workplace Literacy Program are workplace-centered. Other such programs receive state funding. In addition, businesses provide a large portion of funds to support workplace literacy education. Typically, these programs use literacy task analysis and print materials from jobs as the basis for custom-designing the curriculum. The analysis then becomes the basis for job simulation exercises that allow employees to practice literacy-related job skills and link what they have learned to their day-to-day work activities. Thus, workplace education programs can increase productivity for employers and improve job performance for employees. Employees also benefit because improved job performance

may increase their chances of remaining employed or even perhaps, of being promoted.

Besides improving productivity for a particular employer, workplace education programs can also benefit groups of employers who have a common interest, such as a common industry or geographic location. These partnerships are especially beneficial for smaller businesses, who might not have the necessary resources to establish programs on their own, but who can realize substantial cost savings by combining efforts with others. Most of the new jobs being generated in the United States are in the small business sector (Berryman, 1994; Lynch, 1994), and partnerships among small businesses would provide greater access to instruction for these employees.

These partnerships could take several different forms. Employers from the same or similar industries could analyze job tasks they have in common and custom-design a curriculum to be used by all the partners. Groups of industries from a particular geographic location sometimes combine efforts to develop general and job-specific instruction. Two such programs are the Wisconsin Workplace program (Paris, 1990) and a program in Orange County, Florida (Casasnovas-Bauer & Thibodeau, 1990). The Wisconsin Workplace program provided basic skills instruction at 11 worksites to improve retention and advancement. The Florida program involved 21 businesses primarily in the hotel and restaurant industries, including the EPCOT Center. Another program in San Marcos, Texas is reported by McBride, et al (1992). This program served employees in several small businesses including custodial workers, commercial truck drivers, day-care workers and employees in a small manufacturing plant.

Workforce Education Programs

Rather than being targeted to specific employers, jobs or industries, workforce education programs serve more diverse populations and teach more general skills intended to enhance the employability of those entering the workforce. Workforce education programs typically serve: entry-level workers, populations who are re-entering the workforce after an extended period of time, and redeployed (i.e., recently laid off) workers. General instruction is usually provided by state agencies, area literacy councils, community colleges, private industry councils, unions, or other groups.

Instruction in general job-preparedness skills can include filling out applications, preparing resumes, practicing oral communication skills, and teamwork or other skills required to enter the workforce. Typical of these programs is one offered by the Greater Hartford Alliance for Literacy in Connecticut, which responded to the region's economic recession by providing a literacy instruction project aimed at laid-off middle-management workers. The program offered "advanced" (5th to 10th grade level) literacy skills education to enhance the employability of learners (Greater Hartford Community College, 1992). Another community-based program was one in Pennsylvania, titled Potential Reentry Opportunities in Business and Education (PROBE) that addressed the needs of welfare mothers (Baird & Towns, 1991).

Fewer people will now remain in the same job with the same employer throughout their entire careers (Business Council for Effective Literacy, 1993). Due to the rapidly changing nature of the economy and global competition, most people will change jobs and also change from one type of work to another several times during their careers. These populations will need assistance with general work skills such as understanding forms, using computers, communicating effectively, and working in teams. Thus, workforce programs have a better chance of reaching more diverse populations and addressing the changing needs of workers than do programs that target specific jobs at specific businesses.

In summary, workplace education programs can help particular businesses improve

productivity and enhance their overall competitiveness in the global economy. The benefits of improved job performance for employees include greater chances of retention and promotion. By contrast, workforce programs serve more diverse populations including the unemployed. These programs offer general skills that will enhance the employability of these groups. Workforce programs can enhance the skills of entry-level, re-entry, and redeployed workers through instruction in general literacy skills, job-preparedness, and the literacy aspects of general work skills.

Setting Reasonable Goals

Thus far, we have discussed many of the issues faced by workplace and workforce literacy providers and described many methods providers are using to meet these concerns. Obviously, however, it is not possible to implement all these ideas at the outset. Thus, providers should strive to establish reasonable goals in the early stages of planning, to ensure that the needs of learners, employers and other stakeholders are addressed.

Setting realistic, achievable goals can have a positive impact on a workplace literacy program, and this process is also essential to keep the program in focus. Two types of goal-setting procedures are discussed here--establishing program goals in conjunction with a planning committee and setting personalized goals with each learner.

Program Goals

To increase the long-term effectiveness of the program, a planning committee should work together to establish goals. Depending on the organization, the committee might include employees, administrators, representatives from unions or other partner groups, departmental supervisors, or members of the personnel or training departments. The committee can make decisions such as determining what resources are available, deciding which groups of workers to target first for instruction, gathering information, and developing learning goals for each program strand. Establishing a planning group provides the advantage of getting all stakeholders actively involved in guiding the direction of the program from the earliest stages, thus encouraging them to buy into the program.

As each program strand is developed, goals should be written that are achievable in 20-50 hours of instructional time. Establishing goals that are too general in nature will make it difficult to achieve them in a reasonable amount of instructional time. For job-related courses, it is also important to relate goals to job tasks and job simulation exercises that are used as part of the instruction. Doing so will create a stronger link between instruction and jobs.

Learner Goals

Besides establishing program goals, it is also advisable to meet with learners individually to agree on realistic personal goals. As with program goals, these individual educational plans should relate to the curriculum being taught and to jobs. However, individual goals should also take into account the learner's personal interests (e.g., managing finances, time management, personal computer skills). The plans should be reviewed periodically with each learner to assure that appropriate progress is being made and that goals remain relevant to the learner's needs. If necessary, plans should be modified to match progress and any changes in the learner's situation.

As an example of an effective personal goal, someone may state a goal of learning to perform several types of calculations relating to percentages and statistical process control. However, after working toward this goal for several sessions, it may become apparent that the learner needs additional review to understand the meaning of percentages. Thus, the

individual educational plan might be revised to focus on a few specific areas that are posing the problem. Setting realistic, personalized goals will help learners recognize that they are making progress. Thus, they are more likely to buy into the program and remain enrolled for several strands of instruction.

An incentive plan that is tied to goal achievement will also aid in recruitment and retention. Often these incentives are monetary, such as cash or savings bonds, usually for advancing a certain number of levels on a standardized test, or for obtaining the GED. Individual goal setting can enhance the overall effectiveness of the program by keeping learners involved and on track.

To summarize, it is important to set up a planning committee consisting of representatives from all the various stakeholders. The committee should set realistic goals early in the planning process to keep the program on track. Learning goals should also be developed that relate to instruction and jobs and are achievable in the time available for each program strand. Learners should work with instructors to set individual goals, and these goals should be reviewed periodically to ensure that progress is being made. Setting group and personal goals will encourage learners and other stakeholders to buy into the program, increasing its chances for success.

Matching Assessment to Instruction

Evaluation is a critical part of establishing a successful workplace literacy program. The purpose of evaluating a program is to assess how effectively the needs of various stakeholders are being met. A thorough evaluation can document a program's successes and point out areas that need improvement. It uses assessments that measure the extent of learner achievement and increases in job productivity. When an effective evaluation is based on learning objectives and jobs, it can also serve as the basis for continued funding. (For further details on this topic, see Mikulecky, Lloyd, and Kirkley, 1995.)

Evaluation should be based on the achievement of goals as measured by assessments of learners both before and after instruction. A variety of measures should be used to assess the program's impact. The aim is to document the program's success in achieving its goals, which may include attaining gains in literacy ability, improving job productivity, and involving learners in literacy activities at home and with family. Custom-designed assessments, standardized tests, company records, ratings of employee performance by supervisors—and other less formal measures such as surveys and interviews—can all contribute to evaluating the impact of a workplace literacy program. Thus, for example, using multiple measures such as job-related scenarios, company records and supervisor ratings to assess a goal related to increasing productivity will ensure that the program's total impact is clearly demonstrated.

Custom-designed assessments. As curriculum is being designed, assessments should be developed than can be used as pre- and post-measures to determine the extent of gains as a result of instruction. The assessments should reflect as closely as possible the objectives of the lessons being taught, and be relevant to both teaching and jobs. Preferably, the same assessment should be used both pre and post. This will allow the average scores to be compared for a group of learners to determine the extent of learning that took place. For example, a scenario based on skills taught in a course on completing job-related forms can be used to assess mastery of that skill.

Standardized tests. Using standardized tests can provide two benefits to a program.

First, the test can be used to measure learners' current ability levels. The Test of Adult Basic Education is often used, but it is less useful to a workplace literacy program than tests that use more realistic tasks such as the CASAS Life Skills Assessment or the Test of Applied Literacy Skills. As with custom-designed measures, pre- and post-test results can be compared to assess the extent of learner gains. Unlike custom-designed measures, however, standardized test results will show the greatest improvement when post-tests are administered after a longer instructional time (i.e., 40-50 hours or more). This is because standardized tests measure more general literacy skills, and significant gains in general literacy will not usually occur as a result of participating in one or two brief courses.

Company records. Another method of evaluating a program's impact is examining company records, which can reveal a program's impact on job productivity. Records on individual employees (e.g., customer complaints, attendance, tardiness) should be used. However, as with other methods of assessment, the results will only show meaningful improvement if learners are tested after they have completed 20-50 hours of instruction. While individual records can sometimes be difficult to locate, they may show an improvement in an organization's productivity or even perhaps a cost savings due to improved attendance, decreased errors, fewer customer complaints, or improvements in other problems.

Supervisor ratings. Another method of assessing impact on productivity is supervisor ratings of job performance. Supervisor ratings are a series of anchored rating scales that are custom-designed to suit a particular workplace. In this method, program designers should meet with supervisors to discuss which aspects of job performance should be rated and to describe job behaviors. Scales are then developed which include descriptions of top, bottom and average behaviors for each aspect of job performance being rated. When used as pre- and post-assessments, these custom-designed ratings can measure the extent of perceived improvement in job performance.

Less formal measures. In addition to the measures discussed above, less formal interviews and surveys can also be used to measure a program's impact. For example, individual and small-group interviews with supervisors or other stakeholders can be used to learn their opinions of program effectiveness. Surveys can be taken that ask learners for their opinions of course content and its relevance to their jobs and outside interests. Although they are not as specific as pre- and post-assessments, these methods can still provide valuable insight into the perceived effectiveness of a workplace literacy program.

Timing of assessments. The timing of assessments is also important. The results will be more meaningful if learners are tested after 20-50 hours of instruction, so that enough time has elapsed for learners to make measurable progress. Using any of these assessments after learners have completed fewer than 20 hours of instruction is not likely to show learning gains.

To summarize, assessments should be designed and used as pre- and post-measures to evaluate the extent of learner achievement. Standardized tests can also be used to assess gains in general literacy ability as a result of long-term instruction. Company records and supervisor ratings can measure the program's impact on job productivity. Finally, more informal measures such as interviews and opinion surveys will also reveal information about the perceived contribution a program is making to an organization.

Program Types

Research and suggestions above clearly indicate that the most effective workplace literacy programs integrate several different strands and types of instruction. This addresses the needs of the several different learner populations present in the workplace and workforce. Multiple strands also make it possible for learners to move from course to course, acquiring the hundreds of hours of practice needed for substantial literacy gains.

However, few program developers are able to begin with large-scale, integrated programs. Limited time, resources and trust often constrain beginning choices. Most programs begin with a single course or service and gradually expand course offerings and integration of services. Such productive growth is much more likely if program developers have a vision of the integrated program they hope one day to operate.

The descriptions below provide some examples of simple beginning programs, more complex mid-level programs, and fully integrated multi-strand programs. These examples are meant to be helpful, but should not be seen as a road map. The most effective programs always build on local strengths to address local needs. Modifying good ideas makes sense, but simply importing them usually does not. Therefore, the examples given below should not be seen as the only way to proceed, but rather as a source of ideas for developing an effective workplace literacy program.

Single Service Beginnings

Many programs begin by responding to a single literacy need in a particular workplace, and developing a short course to address that need for a small group of workers. This first step may be in a large or small company, or for a local agency such as a chamber of commerce, employment office or literacy council. In any case, an important factor to consider at the start is the establishing of trust between the program provider and the organization being served. If this initial course is to grow into a successful multi-strand program, providers should consult fully with all those involved and discuss openly just what this small beginning program is able to achieve. Setting over-ambitious goals is a recipe for failure, and probably the termination of the relationship. However, if all parties appreciate that a program with limited time and resources can reach only a few clearly-defined goals, then this small beginning program may well lead on to greater things.

Possible starting points for single service programs include developing a short custom-designed course to solve a job-related problem for a particular workplace, providing a class in oral English for ESL workers, or setting up a tutoring scheme to raise the literacy level of workers having difficulty reading workplace materials.

One program of the first type was developed at a small manufacturing firm, where workers were having difficulties with the mathematics associated with Statistical Process Control (SPC). About 15 workers who needed to carry out SPC calculations as part of their company's new quality control scheme attended a class on calculating averages, plotting graphs, and interpreting trends, which used a readily-available mathematics textbook. This class met twice a week over a six-week period, in the last hour of the workers' shift. Thus, an incentive for the workers to attend was that the company was paying them while they were in class. The brief duration of the class (only 12 hours) did not allow time for pre- and post-testing of the workers, and so the course was evaluated by informal supervisor assessments of the competency of the workers in carrying out SPC calculations. Because these indicated a marked improvement in the accuracy of quality control data, the company asked the program providers to expand their offerings to include other courses, such as form-filling and manual reading for machine operators and oral English communication for some Hispanic workers who were having difficulty understanding and being understood by their co-workers.

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Another program—in a hospital—began with English for ESL workers. Because cleaners and maintenance workers spoke a wide range of different languages, the most pressing need was to establish clearer communication in the workplace. The program began with one work team of ten cleaners in a class, learning work-related vocabulary and useful conversational phrases. The class met for 30 minutes four days a week, twice during work time and twice after work. The mixture of paid time and voluntary time was chosen because learning English was of benefit to the workers in their everyday lives as well as being of benefit to the hospital. After this class had been running for two months, the improvement in English of those attending was so marked that the providers were asked to start additional classes for other workers, eventually expanding to include all the ESL cleaners and maintenance workers, and adding GED preparation classes for those who wanted them.

A third example is drawn from a small health benefits office, where a few workers were having difficulty reading benefits charts and rules quickly enough to advise clients over the telephone. A small-group tutoring scheme was started for these workers, who made rapid progress in their ability to skim and summarize with the individual attention that this service provided. During instructional sessions, other difficulties were mentioned to the program teacher, such as problems with writing letters to clients explaining claims information. This led to a proposal to the benefits office for additional strands of instruction. When these proved successful, the program was expanded to several of the company's other offices in the area.

Each of these programs illustrates how successful small beginnings can lead to a much larger and more varied program over time. In all cases, establishing trust between provider and company by delivering initial promises allowed the providers to offer more strands to a wider range of workers as the program developed. In the next two sections, some of these more developed programs are described, but remember that many of them started from such small beginnings as the examples here.

Mid-level Literacy Programs

Mid-level literacy programs offer more strands than a single service beginning program, but are not as extensive as a complete multi-strand program. These programs have more resources, and expend them on additional strands that meet the specific needs of workers and employers. These incorporate literacy instruction that uses a mix of off-the-shelf and custom-designed materials based on analysis of job tasks. For example, custom-designed materials might be developed to teach workers job-related writing skills, but some workbook materials could still be used for additional practice, and also for more general program strands such as a GED preparation course.

In addition, mid-level programs often involve learners in decision-making about material to be taught. This involvement includes offering strands that workers want, such as instruction in helping children with homework, if that is requested. Learners can also participate in more extensive incentive programs. For example, a program might offer monetary incentives such as payment for completing a goal and paid time off to attend classes. Besides addressing learners' personal needs and providing incentive packages, learner involvement can also extend to include assisting with analysis of job literacy tasks.

Evaluation in mid-level programs is usually more formal than in beginning programs. In order to reflect instructional objectives, some assessments are custom-designed to measure the extent of learning in the custom-designed strands of the curriculum. These assessments might be supplemented by standardized tests, and both types of measure administered as pre- and post-assessments, so that results can be compared directly to look for learner gains. Additionally, some measures of productivity can be examined, such as

work attendance records. These custom-designed assessments and measures of productivity can encourage funders to continue support for a program, since they give convincing evidence of a program's success.

One example of a mid-level program that combines general skills instruction with some custom-designed strands is the Basic Education Skills Training (BEST) workplace literacy program in Maury County, Tennessee. Its focus was on job-related instruction and the goal of the program was to increase safety, productivity and morale with decreased absenteeism as a result of improved employee general skills (Westberry, 1990). Another program for employees at BP Chemicals/HITCO, Inc. offered workplace basic education as a foundation for training in Total Quality Management (TQM). Three courses covered communication, English skills, and TQM for Limited English Proficient and ESL workers (El Camino College, 1992). An example of a state workplace program that serves several industries is one offered by the Pennsylvania Department of Education for workers in light industry, health care, hotel, and food services. The program was designed to upgrade workplace vocabulary and comprehension skills, but also included math tasks common to the various occupational areas.

Mid-level literacy programs have a number of advantages over single service beginning programs. By offering several strands and involving learners in decision-making about what should be taught, these programs can obtain greater learner buy-in, thereby increasing enrollment and retention. The use of more custom-designed curriculum also creates a stronger link between instruction and day-to-day job responsibilities. In addition, assessment is more extensive, providing greater evidence if a program's success in increasing learners' ability and productivity.

Fully Integrated Programs

As indicated earlier, fully integrated literacy programs offer the greatest chance for learners to improve their lives by developing increased literacy skills. These programs also offer the best opportunity for workplaces to enhance productivity and increase the effectiveness of their existing technical training programs. Fully integrated programs use multiple strands to address learner and workplace needs, and to provide continuing educational experiences. They make extensive use of custom-designed instruction based on analysis of critical job tasks. Learners are involved in decision-making from the earliest stages of program planning and they participate actively in analyzing literacy-related job tasks.

Fully integrated programs also make extensive use of job-related reading and writing activities, and discussion of job processes. In conjunction with this workplace-centered approach, such programs also provide learner-centered instruction in the form of GED and ESL courses, and general interest strands related to hobbies, retirement, and financial planning. Learners are actively involved in developing these strands from the outset. In addition, fully integrated programs conduct thorough evaluations to measure their success in achieving learning gains and increases in productivity. To measure the latter, these programs use custom-designed workplace instruments such as supervisor ratings of job performance.

The range of instruction in a fully integrated program is usually extensive, and so the examples described here are selected strands from such programs. One example comes from a hospital literacy project in Georgia (Chase, 1990), which focused on entry-level housekeeping, food service and laundry personnel. Literacy task analysis included observations, interviews with workers and supervisors, and collection of print material. Completely customized lessons used job materials such as the personnel manual, pay stubs, memos, and task instruction sheets. In addition, all class sessions began with a chart

showing the job task, knowledge required, and the literacy objectives of that lesson.

Other programs make use of technology when designing customized curriculum. The Working Smart workplace literacy program for the hotel and food industry in California used an interactive video disk for its custom-designed instruction (Los Angeles Unified School District, 1990). A similar program has been used by Service Master of Texas, one of the world's largest maintenance companies, to train their workers (Ziegler & Taylor, 1992). As well as programs based at particular workplaces, there are also fully integrated workforce programs. These provide a menu of computer simulations of such generic work activities as form-filling, team decision-making, etc. Users of the system can select appropriate modules for their needs. Individuals seeking their first job, for example, can try out a variety of these simulations to test their aptitudes and increase their skills.

Although fully integrated programs require a long-term commitment and considerable development, they provide the greatest benefit to employers and employees. Extensive use of custom-designed curriculum can enhance the link from instruction to job tasks, contributing to worker productivity. Such instructional methods can also increase practice time as skills are used on the job, and this type of curriculum can make technical training more effective as learners are better prepared before they take such training.

The greatest benefit of full multi-strand workplace literacy programs is that they offer opportunities for learners to advance from one strand to another, eventually to high-level technical training or college courses. These programs can assist employers by reducing turnover and increasing the promotability of their existing workforce. Employees can also upgrade their skills and gradually increase their quality of life as they advance from lower-level general literacy strands to job-related literacy education, to advanced technical training or higher education. As they advance in lifelong learning, their income and standard of living also increase. Thus, employers and workers can both obtain maximum benefit from these fully integrated programs.

Conclusion

Workplace education programs are becoming increasingly concerned with learners' personal goals for instruction. This concern provides several advantages for stakeholders. Workplaces obtain greater participation and buy-in from learners, enhancing a program's effectiveness. More importantly, learners choose to become involved in long-term instruction. A change in habits, attitudes and lifestyles and the decision to become engaged in lifelong learning also help them remain competitive in the workforce.

Program providers are expanding their curricula to include a mix of learner-centered goals and goals that will benefit employers and society at large. Learner-centered goals include investing in long-term instruction that prepares them for further education at a technical school or community college. Employers will also benefit from job-related skills instruction that supports technical training because it improves productivity, reduces errors and improves safety. Society at large will also benefit as more people remain in the job market, contributing to a growing economy.

If program developers expect to realize gains in literacy and benefits for learners, they should aim toward a long-term, multi-stranded approach to instruction, not a short-term, "quick-fix" solution to problems. Two keys to obtaining maximum effectiveness are increased practice time and expanded opportunities for learners to use literacy. Out-of-class practice time can be multiplied when materials are targeted to learners' day-to-day activities

both on and off the job. Using commonplace items such as bills, bank deposit slips, and work orders as the basis for instructional scenarios can increase practice time and provide more opportunities for learners to use literacy-related skills.

As workplace and workforce education programs expand to include both learner-centered and employer-centered goals, the responsibility for program providers becomes greater. Providers need to think in terms of short-term (getting started) goals and long-term (integrated, multi-strand) goals. First, working with all stakeholders, develop a course that has a specific goal that can be accomplished in a set number of hours of instruction. Learners should be involved in the design of this first program strand. Also, during the early planning stages, work with stakeholders to establish long-term goals that can be accomplished by developing additional strands. Planners should strive to develop strands that will produce results in the short term, as well as aiming to add strands with specific goals for the future.

The purpose of any workplace or workforce literacy program should be to help learners compete in a job market where skill demands are constantly expanding. We challenge you to begin today to develop a long-term, multi-stranded approach to instruction that will help learners adapt to these demands and lead productive lives, contributing to the local, national and world economies.

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